

FIRST RECORD OF *LAMINIZETES* (ACARI, ORIBATIDA, CERATOZETIDAE), WITH DESCRIPTION OF A NEW SPECIES IN CHINA

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Abstract The genus *Laminizetes* Behan-Pelletier, 1986 is reported for the first time in China, and a new species *Laminizetes tabulatus* Huang et Yang, sp. nov. is described and illustrated from Da Hinggan Ling, Heilongjiang, China. It is the second known species of genus *Laminizetes*. The new species can be easily distinguished from the type species *Laminizetes fortispinosus* Behan-Pelletier, 1986 by the rostrum rounded; 10 pairs of notogastral setae strong and slightly tabulated; lamellae lamelliform, broad; setae *le* and *in* strong, heavily barbed and slightly tabulated; sensillus long, fusiformed; setae *l*" on genua, tibiae I–IV and tarsi I–II, *pl*" on tarsus I, and *ft*" on tarsus II thick, heavily and strongly barbed; setae *s* of tarsus II with large lateral branches; genua III setae *l*" very long. A detail comparison between new species and type species *L. fortispinosus* Behan-Pelletier, 1986 is also given.

Key words Oribatida, Ceratozetidae, *Laminizetes*, new species, China.

1 Introduction

The genus *Laminizetes* was proposed by Behan-Pelletier (1986) with *Laminizetes fortispinosus* Behan-Pelletier, 1986 as its type species. Balogh (1992a, 1992b) re-illustrated it, but Subías (2004) considered it as a subgenus of the genus *Trichoribates*. For its broad lamellae; well developed bothridial wall; setae *l*" on genua, tibiae, and tarsi I–II, *pl*" on tarsus I, and *ft*" on tarsus II thick, heavily and strongly barbed, the genus *Laminizetes* is much different from *Trichoribates*. Therefore we would likely follow with Behan-Pelletier (1986) and Balogh (1992a, 1992b).

This paper firstly reports the genus *Laminizetes* in China, with description of a new species *Laminizetes tabulatus* sp. nov. Specimens were collected from Da Hinggan Ling, Heilongjiang, China.

2 Materials and Methods

Measurements, given in μm , and observations are based on specimens mounted in temporary cavity slides macerated in 90 % aqueous lactic acid. Body length is measured from the tip of the rostrum to the posterior edge of the ventral plate in dorsal view. Dorsal view, ventral view and lateral view drawing were made under 200 magnification, leg drawing under 400 magnification.

Morphological terminology used mostly follow Menke (1963, 1964) and Pavlitshenk (1994). Specimens were stored in 75 % ethanol and deposited

in the Institute of Entomology, Guizhou University, Guiyang, China (GUGC).

3 Taxonomy

Laminizetes tabulatus Huang et Yang, sp. nov.

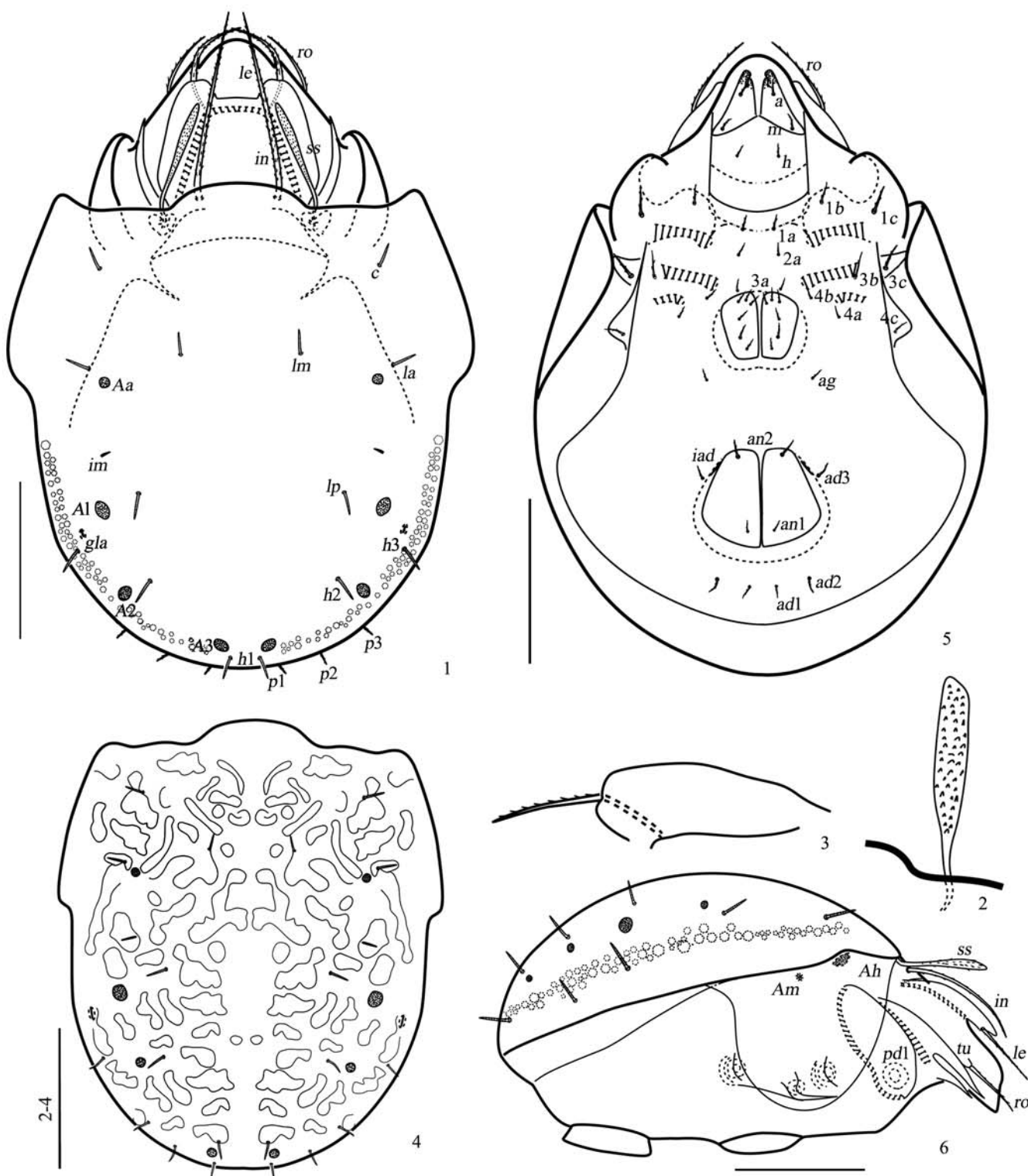
(Figs 1–10)

Diagnosis. Pteromorphs immovable. Rostrum rounded. Lamellae very broad. Lamellar cusp as wide as its long, without dens. Lamellar setae (*le*) and interlamellar setae (*in*) heavily barbed, slightly thicker and tabularer than setae *ro*. Translamellae medium wide. Setae *in* insertions covered by anterior margin of notogaster. Sensillus (*ss*) fusiformed, long. Bothridium (*bo*) concealed under anterior margin of notogaster, scales *sum* and *sol* large. Tutorial cusp long, extending beyond insertions of setae *ro*. Pedotectum I (*pd1*) large. 10 pairs of notogastral setae strong, slightly tabulated and barbed. Porose area *Aa* smallest. Coxisternal setae slightly barbed, epimeral setal formula: 3-1-3-3. All tarsi heterotridactylous. Setae *l*" present on tarsus II; setae *l*" on genua, tibiae I–IV and tarsi I–II, *pl*" on tarsus I, and *ft*" on tarsus II thick, heavily and strongly barbed. Setae *s* of tarsus II with large lateral branches. Setae *l*" of genua III long.

Measurement. Mean body length ($n = 3$): 433, range 430–435; mean notogastral length: 344, range 340–345; mean notogastral width: 303, range 300–305. Holotype body length 435, notogastral length 345,

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Figs 1 – 6. *Laminizetes tabulatus* Huang *et al.*, sp. nov. 1, 5 – 6. Adult. 2. Sensillus. 3. Lamellae and lamellar setae. 4. Variation. 1, 4. Dorsal view. 5. Ventral view. 6. Lateral view. Scale bars: 1, 4 – 6 = 100 μ m, 2 – 3 = 50 μ m.

notogastral width 305.

Integument (Figs 1, 4). Body colour deep reddish brown to dark. Microtuberculate over whole body and leg segments, forming short striae on notogaster and venter, forming long striae on coxisterna, in circumgenital area, on femora I – IV, and trochanters III – IV. Some individuals with deep

wrinkle pattern all over the whole body.

Prodorsum (Figs 1 – 3). Rostrum rounded, without medial teeth or lateral teeth. Rostral setae (*ro*) (45) strongly barbed, extending well beyond tip of rostrum. Lamellae very broad (24), slightly converging, reaching anteriad to the insertions of setae *ro*. Lamellar cusp, as wide as its long (23), without

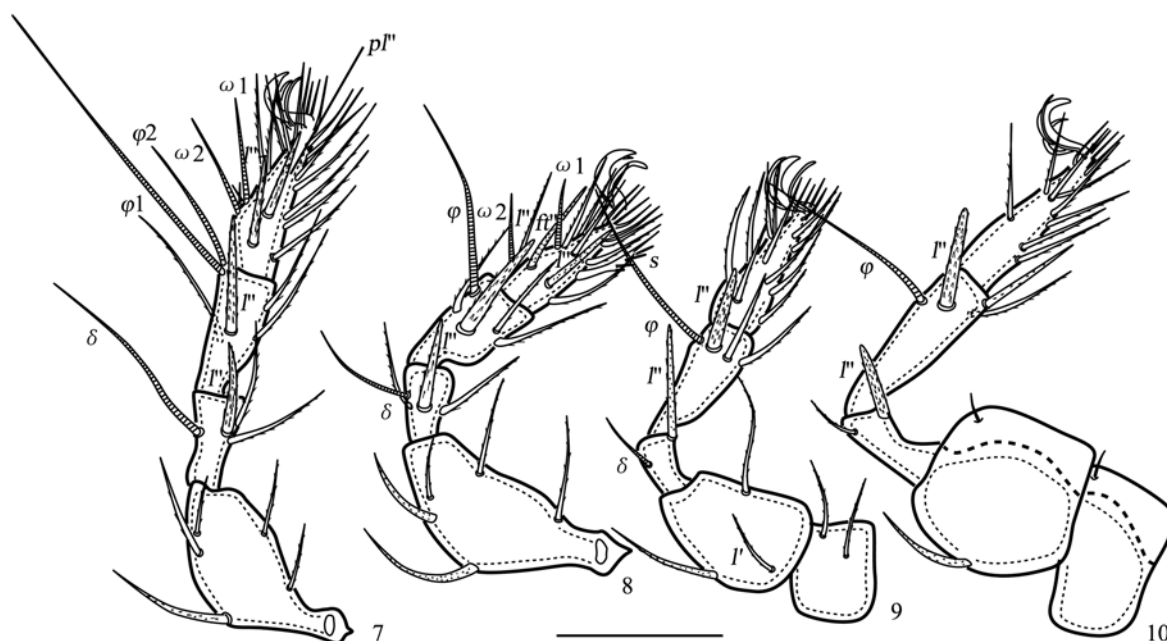
dens, rounded and broad anteromedially and anterolaterally. Lamellar setae (*le*) (60) strongly barbed, slightly thicker and tabularer than setae *ro*, extending well beyond tip of rostrum. Distance between bases of cusps (30) less than distance between interlamellar setae *in* (48). Translamellae medium wide (9). Setae *in* (119) strongly barbed, slightly thicker and tabularer than setae *ro*, similar in shape to *le*, 2 times length of setae *le*, extending well beyond tip of rostrum, insertions covered by anterior margin of notogaster. Sensillus (*ss*) (69) fusiformed, long, four fifths length of lamellae. Bothridium (*bo*) concealed under anterior margin of notogaster, scales *svm* and *svl* large, *svm* continuing dorsally as narrow as *sdm*; free margin of *psdm* convex. Porose area *Aj* not evident. Setae *ex* (24) finely barbed. Comparative length: *in* > *ss* > *le* > *ro* > *ex*.

Lateral aspect of prodorsum (Fig. 6). Genal tooth long, triangular, tapering gently to pointed tip. Tutorium (*tu*) long (115), with longitudinal striae along dorsal margin, fused portion without dorsal spines. Tutorial cusp long (50), extending beyond insertions of setae *ro*. Pedotectum I (*pdI*) large, with convex dorsal margin, just covering insertions of setae *ex*. Pedotectum II small, covering only small part of acetabulum II. Custodium extending anteriorad of acetabulum II. Porose areas *Am*, *Ah* evident, *Al* absent.

Notogaster (Figs 1, 4). A little longer than wide, about 1.1:1.0. Anterior margin arched medially. 10 pairs of notogastral setae medium length (12–15), strong, slightly tabulated and slightly barbed. 4 pairs of porose area round to elongate oval, *Aa* smallest, *A1*, *A2* and *A3* elongate-oval, equaled in diameter; lyrifissure *im* and opisthonotal gland opening *gla* well developed, distance *im-A1* > *A1-gla*.

Ventral region (Fig. 5). Coxisternal setae barbed, *1c*, *3b* and *3c* longer and more heavily barbed than other setae. Genital aperture relatively broad in anterior half, six pairs of genital setae and one pair of aggenital setae fine and slightly barbed, *g1*–*g3* close to anterior margin of plate, *g1* lower right of *g2* and *g3*. Anal aperture trapezoid, relatively broad in posterior part. 2 pairs of anal setae and 3 pairs of adanal setae short and thick. *ad1* and *ad2* arrange on one level. Adanal lyrifissures *iad* well developed. Epimeral setal formula: 3-1-3-3.

Legs (Figs 7–10). All tarsi heterotridactylous, with a strong median claw and two slender lateral claws. Setation (I–IV) (solenidia counts in parentheses): trochanters, 1-1-2-1; femora, 5-5-3-2; genua, 3 (1) -3 (1) -1 (1) -2; tibiae, 4 (2) -4 (1) -3 (1) -3 (1); tarsi, 19 (2) -16 (2) -15-12. Homology of setae and solenidia indicated in Table 1. Tibiae II segments sharply expand broad.



Figs 7–10. *Laminizetes tabulatus* Huang et Yang, sp. nov. 7. Leg I. 8. Leg II. 9. Leg III. 10. Leg IV. Scale bar = 50 μ m.

Setae *v'* absent from tarsus I, setae *l'* present on femur III; setae *l''* present on tarsus II; setae *l''* on genua, tibiae I–IV and tarsi I–II, *pl''* on tarsus I, and *ft''* on tarsus II thick, heavily and strongly

barbed, much thicker than other setae on these segments and tapered, not acuminate, distally, except for setae *ft''* on tarsus II; setae *s* of tarsus II with large lateral branches. Genua III setae *l''* nearly as

long as 2 times length of segment genua III.

Holotype ♀, China, Heilongjiang Province, Da Hinggan Ling Region, Jiagedaqui City, Tahe County (52°20'N, 124°42'E), from litter, 601 m a. s. l., 15 July 2010, coll. PENG Xu-Jian. Paratypes: 2 ♀♀, same data as holotype.

Distribution. Known only from type locality.

Etymology. The specific name "tabulatus" refers to the slightly tabular setae *m*, setae *le* and notogastral setae.

Remarks. In having 10 pairs of strongly medium-length notogastral setae; lamellae very broad; tutorium with long free cusp; setae *l*" on genua, tibiae, and tarsi I, II, *pl*" on tarsus I, and *ft*" on tarsus II thick, heavily and strongly barbed, much thicker than other setae on these segments and tapered. This new species is similar with *Laminizetes fortispinosus* Behan-Pelletier, 1986, the comparisons between each other are as Table 2.

Table 1. Leg setation and solenidia of *Laminizetes tabulatus* Huang *et* Yang, sp. nov.

Legs	Trochanter	Femur	Genu	Tibia	Tarsus
I	<i>v</i>	<i>d</i> , (<i>l</i>), <i>bv</i> ", <i>v</i> "	(<i>l</i>), <i>v</i> , σ	(<i>l</i>), (<i>v</i>), $\varphi 1$, $\varphi 2$	(<i>ft</i>), (<i>tc</i>), (<i>it</i>), (<i>p</i>), (<i>u</i>), (<i>a</i>), <i>s</i> , (<i>pv</i>), (<i>pl</i>), <i>l</i> ", <i>e</i> , $\omega 1$, $\omega 2$
II	<i>v</i>	<i>d</i> , (<i>l</i>), <i>bv</i> ", <i>v</i> "	(<i>l</i>), <i>v</i> , σ	(<i>l</i>), (<i>v</i>), φ	(<i>ft</i>), (<i>tc</i>), (<i>it</i>), (<i>p</i>), (<i>u</i>), (<i>a</i>), <i>s</i> , (<i>pv</i>), <i>l</i> ", $\omega 1$, $\omega 2$
III	<i>l'</i> , <i>v'</i>	<i>d</i> , <i>l'</i> , <i>ev'</i>	<i>l</i> ", σ	<i>l</i> ", (<i>v</i>), φ	(<i>ft</i>), (<i>tc</i>), (<i>it</i>), (<i>p</i>), (<i>u</i>), (<i>a</i>), <i>s</i> , (<i>pv</i>)
IV	<i>v</i>	<i>d</i> , <i>ev'</i>	<i>d</i> , <i>l</i> "	<i>l</i> ", (<i>v</i>), φ	<i>ft</i> ", (<i>tc</i>), (<i>p</i>), (<i>u</i>), (<i>a</i>), <i>s</i> , (<i>pv</i>)

Table 2. Comparison between *L. tabulatus* Huang *et* Yang, sp. nov. and *L. fortispinosus*.

Morphological characters	<i>L. tabulatus</i> Huang <i>et</i> Yang, sp. nov.	<i>L. fortispinosus</i>
Notogastral setae	Slightly tabulated and barbed	Slightly barbed, but not tabulated
Setae <i>m</i> and Setae <i>le</i>	Heavily barbed, slightly thicker and more tabular than setae <i>ro</i>	Heavily barbed, as thick as setae <i>ro</i>
Sensillus (<i>ss</i>)	Long, fusiformed, four fifths length of lamellae	Short, clavated, one third length of lamellae
Rostrum	Rounded, without concave incision	With concave incision medially
Insertions of setae <i>m</i>	Covered by anterior margin of notogaster	Not covered by anterior margin of notogaster
Porose area <i>Aa</i>	Smallest in porose areas	Largest in porose areas
Segment tibiae II	Sharply expand broaded	Not sharply expand broaded
Setae <i>l</i> " on genua III	Very long, nearly 2 times length of segment genua III	Normal length
Setae <i>l'</i> on femur III	Present	Absent
Setae <i>s</i> of tarsus II	With large lateral branches	Barbed, without large lateral branches

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中国尖棱甲螨科（甲螨亚目，尖棱甲螨总科）一新纪录属一新种

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摘 要 记述了中国尖棱甲螨科 1 新纪录属 1 新种, 扁毛片尖棱甲螨 *Laminizetes tabulatus* Huang et Yang, sp. nov.。新种是片尖棱甲螨属 *Laminizetes* 的第 2 个种, 其主要鉴别特征是: 吻圆; 后背板毛 10 对, 粗壮略扁平; 梁片状, 大而宽; 梁毛 *le* 和梁间毛 *in* 粗壮, 具浓密微刺, 略扁平; 感器长, 梭形; 腿节和

胫节 I ~ IV 以及跗节 I ~ II 上的 *l*"毛、跗节 I 上的 *pl*"毛、跗节 II 上 *fl*"毛粗壮, 具浓密微刺; 跗节 II 上 *s* 毛呈大齿梳状; 腿节 III 上 *l*"毛较长。此外, 还对新种和模式种之间的差异做了较详细的比较。

关键词 甲螨亚目, 尖棱甲螨科, 片尖棱甲螨属, 新种, 中国.
中图分类号 Q959.226

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